Biomarkers for Barrett’s Esophagus Associated Neoplasia

Summary:
This invention uses microRNA biomarkers to detect or diagnose Barrett’s esophagus, detect dysplasia in Barrett’s esophagus, and detect early onset of esophageal cancer.

Contact Information: Matt Koenig, J.D.
KU Innovation & Collaboration (785)864-1774 mekoenig@ku.edu

Benefits:
- Does not require special media or sophisticated methodology required to use previously identified biomarkers
- May be less susceptible to degradation and more easily isolated than previously identified biomarkers
- Very stable in serum, as compared to previously identified biomarkers

Overview:
Barrett’s esophagus (BE) is a condition in which the epithelial cells that normally line the esophagus are replaced by columnar epithelial cells, cells that typically line the stomach and intestines. Detection and diagnosis of Barrett’s esophagus is important, because the condition correlates to a significant increase in the risk of esophageal adenocarcinoma (a type of cancer with a high mortality rate). To identify Barrett’s esophagus patients at high risk for developing adenocarcinoma, diagnosticians check for histologic dysplasia.

Currently, a diagnosis of Barrett’s esophagus or dysplasia in Barrett’s esophagus involves an endoscopy and a biopsy of esophageal cells. However, diagnosis through these macroscopic and microscopic observations of changes in the esophageal tissue is difficult. Diagnosis of dysplasia faces poor interobserver agreement, sampling error, and limited positive predictive value. One study has also shown a high incidence of false negatives among dysplasia diagnoses. Thus, a more reliable diagnostic method would be of great benefit to diagnosticians and patients with Barrett’s esophagus.

While there are known biomarkers for BE that have shown promise as potential diagnostic tools, they are limited in clinical applications because they require special collection media, technical expertise, and yield variable accuracy. There remains a great need for clinically useful biomarkers to identify Barrett’s esophagus patients at greater risk for developing adenocarcinoma.

How it works:
The two novel microRNA biomarkers in this invention exhibit clinical accuracy for predicting dysplasia and adenocarcinoma, even in non-dysplastic tissue samples. In a clinical setting, an endoscopist could sample the Barrett’s esophagus segment from any location, and the microRNA biomarkers would be used to determine whether the patient is at a high or low risk for dysplasia or adenocarcinoma.

Patents:
Patent pending.

Additional Web Content:
Contact the inventor, Ajay Bansal, Lane Christenson, Prateek Sharma, Mahesh Visvanathan.

11KU027M